

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

1. A method for suppressing noise having a primary tone
from a noise source within a duct housing comprising:

generating an exciting sound wave having a primary
frequency generally different from a frequency of the
primary tone of the noise, and

modulating the primary tone of the noise using the
generated exciting sound wave to excite within the duct
housing a fluid medium in which a sound wave of the noise
propagates so that sound energy of the noise is
re-distributed from the frequency of the primary tone to a
broad range of side bands and the amplitude of the primary
tone of the noise is reduced.

2. A method as claimed in claim 1 wherein the fluid
medium is air.

3. A method as claimed in claim 1 wherein the exciting
sound wave is generated by a force of a fluid flow acting
on a mechanical device.

4. A noise attenuation system for suppressing noise having a primary tone from a noise source comprising:

an elongated housing surrounding the noise source, the housing having a first and second openings on opposite ends, wherein the a sound wave from the noise source propagates in air outwardly towards the first and second openings; and

an exciting sound wave generator associated with the housing, the generator generating an exciting sound wave having a primary frequency generally different from a frequency of the primary tone of the noise to excite the air within the housing and modulate the primary tone of the noise so that sound energy of the noise is re-distributed from the frequency of the primary tone to a broad range of side bands and the amplitude of the primary tone of the noise is reduced.

5. A noise attenuation system as claimed in claim 4 wherein the exciting sound wave generator is positioned on an inner wall of the housing.

6. A noise attenuation system as claimed in claim 5 wherein the exciting sound wave generator comprises a mechanical device excited by a force of air flow to generate the exciting sound wave.

7. A noise attenuation system for suppressing noise having a primary tone from a jet engine comprising:

a nacelle surrounding the jet engine, the nacelle having an inlet and an outlet for receiving and exhausting air flow respectively, wherein a sound wave of the noise produced from the jet engine propagates outwardly towards the inlet and outlet; and

an exciting sound wave generator associated with the nacelle, generating an exciting sound wave having a primary frequency generally different from a frequency of the primary tone of the noise to excite the air flow in the nacelle and modulate the primary tone of the noise so that sound energy of the noise is re-distributed from the frequency of the primary tone to a broad range of side bands and the amplitude of the primary tone of the noise is reduced.

8. A noise attenuation system as claimed in claim 7 wherein the exciting sound wave generator is positioned on an inner wall of the nacelle at the inlet.

9. A noise attenuation system as claimed in claim 8 wherein the exciting sound wave generator comprises a mechanical device excited by a force of air flow to generate the exciting sound wave.

10. A noise attenuation system as claimed in claim 9 wherein the mechanical device comprises a fence member exposed to the air flow entering the inlet of the nacelle.

11. A noise attenuation system as claimed in claim 9 wherein the mechanical device comprises an aperture defined in the inner wall, an air flow jetting from the aperture into the nacelle.